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ScienceDirect

Procedia - Social and Behavioral Sciences 176 (2015) 340 – 345

Procedia
Social and Behavioral Sciences

IETC 2014

Technological impact on teaching of online managerial accounting

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Abstract

Using technology in teaching college level Managerial Accounting is an inevitable trend as massive open online courses (MOOCs) are proposed as cost saving tools for many entry-level college courses. However, its benefits won't be evident for several years and there is still much debate among experts (Wall Street Journal, May 12, 2014). Our university is no exception and we are trying online teaching on a trial basis. I have been teaching online principle-level Managerial Accounting for more than two years now. From my observations over the past two years, motivated students are doing as well as the face-to-face students are, but non-highly motivated students struggle and failure rates are high. It may be acceptable to use MOOCs for social or humanities subjects, but some technical classes like accounting, do not translate effectively as a mechanism to deliver course content. I tested empirically using a Regression Analysis computer assignment to examine this issue and our class results show online students underperformed on this assignment compared to in-class students. Our college uses Echo360 for recording lectures and I made the recording available for the assignment. I provided face-to-face explanations and help for in-class students, but online students worked primarily by themselves.

Peer-review under responsibility of the Sakarya University.

Keywords: online teaching, managerial accounting, technological impact on teaching

1. Introduction

Online courses may play a more important role in higher education in the future. Massive open online courses (MOOCs) are popular because they benefit non-traditional students as well as students in remote locations (Wall Street Journal, May 12, 2014). However, how to proctor exams and online security issues are concerns for MOOCs. The University of Nebraska at Omaha, initiated an ad hoc MOOC committee, but not much progress has been made so far. The ad hoc committee is inactive currently because of no budget support from the university.

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Peer-review under responsibility of the Sakarya University.
doi:10.1016/j.sbspro.2015.01.480

Online schooling has success stories teaching English in Venezuela, for example (Wall Street Journal, June 18, 2014). However, whether this model will apply to other courses is an empirical question. This paper will examine current issues in teaching online managerial accounting. The next section reviews relevant papers for this research. The following section describes the method I use. The last section summarizes my findings and the limitations of this research.

2. Prior research

There are several models to assess student performance. Crisostomo (2011) uses a static instrument with 60 multiple choice questions with a pre- and post-test to measure student learning. However, for my study, I used one computer assignment to compare online student performance with in-class student performance.

The computer and other media affect the learning process of today's students (Jones and Wright, 2010). Basic computer skills are necessary to earn a degree in today's college education, but we do not teach remedial classes anymore because of budget cuts. However, there are huge individual differences in computer mastery levels. Jones and Wright (2010) used the Group Embedded Figures Test in their study. This test is for field-dependence developed by Witkin et al. (1971). Field-independent individuals show greater analytical skills than field-dependent individuals and accounting and engineering attract more field-independent individuals (Hicks et al. 2007). However, managerial accounting classes are required for all business majors and these issues are not clear because this course is taken before they choose their specific majors.

DeBerg and Chapman (2012) used common final exams with several sections of different pedagogical methods and found that performance on the final exam shows that students who learned with the textbook and students who learned in a nontraditional format have no statistical difference. This is the approach I used for my study since this method applied to principles of financial accounting which is equivalent to our managerial accounting. In addition, they emphasized that too much focus on student evaluation of teaching instruments by administrators to determine teaching effectiveness should be avoided.

Wernet et al. (2000) shows that increases in enrollment are due to part-time and adult students. These non-traditional students need online classes to pursue their goals. Online classes provide flexibility and convenience for adult learners (Machuca, 2007). Singh and Pan (2004) propose online classes are as good as in-class learning. However, recent huge student loan defaults from for-profit online institutions show total online class degrees are becoming a questionable value. It also depends on the course content and course delivery method. Managerial accounting needs basic analytical skills to understand the course content. Therefore, teaching online managerial accounting needs to include some basic computer skills as we specified in our course objectives.

3. Methods

We have five learning goals for Managerial Accounting (ACCT2020) at the University of Nebraska at Omaha. These are as follows:

Goal 1: Students are good decision makers.
Objective 1: Students consider alternatives.
Objective 2: Students make appropriate choices.

Goal 2: Students have a knowledge base necessary to function in today's business environment.
Objective 1: Demonstrate knowledge from the business core courses.
Objective 2: Demonstrate understanding in an area of specialization.

Goal 3: Students can appropriately use technology.
Objective 1: Demonstrates the ability to use technology as a tool in problem solving.

Goal 4: Students have the ability to communicate effectively.
Objective 1: Demonstrate the ability to employ clear, concise and effective written communication skills.

Objective 2: Demonstrates effective oral communication skills.

Goal 5: Functions effectively within a work related team.
Objective 1: Demonstrate the ability to contribute to achieving team goals.

Goal 3 requires three computer assignments. These assignments are worth 100 points out of total of 700 points for online classes. Also, 150 points of the total of 700 includes online homework. One of these three computer assignments is the regression analysis assignment.

The computer project below is an example of regression analysis. I designed this assignment to measure the five traits required by our College of Business Administration last year with the ad hoc committee from each department within the college.

3.1. Computer project # 3

* Using "Excel," do the following problem using “the High-Low Method” and “Regression Analysis” and turn in the Excel file including your recommendation.

* Feel free to ask any questions concerning this project. You can discuss this project with other classmates, but do not copy somebody else's outputs. Remember the due date.

*To run the regression using **the Excel Program, use Tools, Data Analysis, Regression and choose x – cost driver and y – costs we want to predict. If you are using regression for the first time, click Tools, Add-ins, Analysis toolpak, Regression just for setting up the regression program once.**

Problem: The King Corporation is developing a model to explain and predict overhead costs. It produces only one product-line so that a simple count of the number of units produced each month may be a good measure of activity to begin with. The company has collected data for the past twelve months:

Month	Overhead Cost	Production Units
1	$254,500	40,000
2	184,500	24,000
3	165,400	21,000
4	178,000	23,000
5	192,000	25,000
6	225,000	31,000
7	210,000	28,000
8	230,000	30,000
9	195,000	29,000
10	224,000	36,000
11	200,000	32,000
12	240,000	38,000

Required:

1. Open a spreadsheet and enter the data.
2. Create another worksheet and enter the High-Low method formula to calculate variable cost per unit and total fixed costs. Use $y = a + b(x)$ formula. Enter *a* (total fixed costs) in Cell 20B and *b* (variable cost per unit) in Cell 20C.

3. Create another worksheet and run regression (Least Squared Method) and save the output.

4. Create another worksheet and save both outputs by linking worksheets. Determine whether the High-Low method or Regression Analysis is better to predict monthly overhead costs. Explain which model is the better? Why or why not?

5. Use absolute cell address in y = *a* + *b(x)* formula (Use absolute August X Value) to predict January and December overhead costs. Do you think these predicted overhead costs are reasonable?

Each question measures a task required by UNO CBA as follows:

Task A: Create a spreadsheet from a blank worksheet, using separate data input section
Task B: Write basic math equations
Task C: Link worksheets within a file
Task D: Use absolute and relative cell addresses
Task E: Perform regression analysis

The following is the results. I teach two face-to-face classes and one online class.

Process For each task:
Y: indicates that student meets expectations
N: indicates that student fails to meet expectations

Summary Assessment Requirements:

# yes Tasks	**Rating**	
0	**F**	**Fails to meet expectations**
1	**F**	**Fails to meet expectations**
2	**F**	**Fails to meet expectations**
3	**F**	**Fails to meet expectations**
4	**M**	**Meets expectations**
5	**E**	**Exceeds expectations**

Table 1: Overall Results

Student Performance:							
Student group	Task A	Task B	Task C	Task D	Task E	# of Yes	Summary Assess (E, M, or F)
1	y	y	y	n	y	4	M
1	y	y	y	n	y	4	M
1	y	y	y	y	y	5	E
1	y	y	y	y	y	5	E
1	y	y	y	y	y	5	E
1	y	y	y	y	y	5	E
1	y	y	y	y	y	5	E
1	y	y	y	n	y	4	M
l	y	y	y	y	y	5	E
1	y	y	y	n	y	4	M

1	y	y	y	y	y	5	E
1	y	y	y	y	y	5	E
1	y	y	y	n	y	4	M
1	y	y	y	y	y	5	E
1	y	y	y	y	y	5	E
1	y	y	y	y	y	5	E
1	y	y	y	y	y	5	E
0	n	y	n	n	y	2	F
0	y	y	y	n	y	4	M
0	y	y	y	y	y	5	E
	19	20	19	13	20		

SUMMARY:	# Students	% students
Failing to meet - F	1	5%
Meeting - M	6	30%
Exceeding - E	13	65%
Total	20	100%

Student group 1 refers to face-to-face students and 0 refers to online students. Overall 95% meet or exceed expectations. This result satisfies college requirements. However, comparing online and face-to-face student performance show online student performance is lower. Average scores of face-to-face students are 96% compared with average scores for online students which are 77%. These are the results for Spring 2014. I need to collect additional data to do more statistical analysis.

Table 2 reports each student's grade.

Table 2: Individual Scores

Points	Missed	Earned Points	Percentage	Class
50	2	48	96%	1
50	2	48	96%	1
50	0	50	100%	1
50	0	50	100%	1
50		50	100%	1
50	4	46	92%	1
50		50	100%	1
50	4	46	92%	1
50	4	46	92%	1
50	0	50	100%	1
50	4	46	92%	1
50	0	50	100%	1
50	0	50	100%	1
50	4	46	92%	1

50	0	50	100%	1
50	10	40	80%	1
50	2	48	96%	1
50	0	50	100%	1
50	20	30	60%	0
50	12	38	76%	0
50	2	48	96%	0

4. Summary

I tested empirically using a Regression Analysis computer assignment to examine the effectiveness of online managerial accounting and the class results show online students underperformed on this assignment compared to in-class students. We use Echo360 for recording lectures and I made it available for the assignment. I provided face-to-face explanations and help for in-class students, however, online students worked primarily by themselves.

The limitation of this study was that it was a small sample study. Since this assignment was given as the last assignment of Spring 2014 and I gave 4 weeks to complete it, a lot of students gave up and the sample I collected was only a small portion of total enrolled students. I may need to design a better research method to measure effectiveness of online classes in the future.

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